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GILLIAM, BARBARA LEE

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1752	5

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/091,482	Applicant(s) NAKATSUKASA ET AL.	
	Examiner Barbara Gilliam	Art Unit 1752	

-- The MAILING DATE of this c mmunication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *21-34* is/are allowed.

6)☒ Claim(s) *35,36,38-41,43-46 and 48* is/are rejected.

7)☒ Claim(s) *37,42 and 47* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *08/974,490* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Preliminary amendments A and B have been entered.

2. Claims 21-48 are present.

   a. Original claims 1-20 were canceled.

   b. New claims 21-48 were added.

Priority

3. This application is a continuation of 08/974,490 filed November 19, 1997.

4. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copies have been filed in parent Application No. 08/874,490, filed on November 19, 1997.

Claims

5. The claims of the present application are product-by-process claims. Applicant is reminded of MPEP 2113: "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence

establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983)

6. The Examiner carefully considered all declaration evidence submitted in the parent application.

7. Claim 35 needs a period at the end of the claim.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 35-36, 38-39 and 43 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 and 6 of U.S. Patent No. 6,388,007 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because Nakatsukasa et al. claim a resin composition, which comprises an ethylene-α-olefin copolymer (A) which is produced

with a single-site catalyst, in which the α-olefin has 3-8 carbon atoms, and an ethylene-vinyl alcohol copolymer (B) having an ethylene content of 20-60 mol % and a degree of hydrolysis of 95% or above. The resin satisfies the equation (5): 1/99 ≤{weight of (A)}/{weight of (B)} ≤ 40/60 (claim 1). The molecular weight distribution (Mw/Mn) of copolymer (A) is not greater than 4 (claim 2). The ethylene-vinyl alcohol copolymer (B) contains a phosphorus compound in an amount of 2-200 ppm in terms of elemental phosphorous (claim 3). The melt flow rate Ma of the copolymer (A) and the melt flow rate Mb of the ethylene-vinyl alcohol copolymer (B) satisfies the equation 0.2 ≤ Ma/Mb ≤ 20 (claim 6). The ethylene-α-olefin copolymer (A) and the ethylene–vinyl alcohol copolymer (B) meet the present limitations for the copolymer (A) and ethylene-vinyl alcohol copolymer (B) respectively. The equation of the Nakatsukasa et al., 1/99 ≤{weight of (A)}/{weight of (B)} ≤ 40/60, falls within the range of the presently claimed equation, 1/99 ≤{weight of (A)}/{weight of (B)} ≤ 99/1.

b. Therefore it would have been obvious to one of ordinary skill in the art to make a resin composition comprising an ethylene-α-olefin copolymer (A) produced with a single-site catalyst, in which the α-olefin has 3-8 carbon atoms, and an ethylene-vinyl alcohol copolymer (B) having an ethylene content of 20-60 mol %, a degree of hydrolysis of 95% or above and containing a phosphorus compound in an amount of 2-200 ppm wherein the molecular weight distribution (Mw/Mn) of copolymer (A) is not greater than 4 with reasonable expectation of obtaining a resin composition that satisfies the following equations 1/99 ≤{weight of (A)}/{weight of (B)} ≤ 40/60 and 0.2 ≤ Ma/Mb ≤ 20 wherein Ma is the melt flow rate of copolymer (A) and Mb is the melt

flow rate of ethylene-vinyl alcohol copolymer (B) based on the teachings of Nakatsukasa et al.

10. Claim 44 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 6,3887,007 B1 in view of Negi et al (EP 682 072 A2).

a. As indicated in the obviousness-type double patenting rejection above, Nakatsukasa et al. claim a resin composition, which comprises an ethylene-α-olefin copolymer (A) which is produced with a single-site catalyst, in which the α-olefin has 3-8 carbon atoms, and an ethylene-vinyl alcohol copolymer (B) having an ethylene content of 20-60 mol % and a degree of hydrolysis of 95% or above. The resin satisfies the equation (5): $1/99 \leq \{\text{weight of (A)}\}/\{\text{weight of (B)}\} \leq 40/60$ (claim 1). Nakatsukasa et al. do not claim the resin composition comprising a hydrotalcite.

b. In EP 682 072 A2, Negi et al. teach a resin composition comprising a polyolefin (A), a saponified product (B) of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 80%, and ester or vinyl ester an olefin-unsaturated dicarboxylic anhydride-unsaturated carboxylic copolymer (C) (abstract & claim 1). The resin composition may further comprise a hydrotalcite compound (D) in an amount of from 0.0001 to 2% to improve the intralayer separation strength (page 5, lines 8-12).

c. Therefore it would have been obvious to one of ordinary skill in the art to make a resin composition comprising an ethylene-α-olefin copolymer (A) which is

produced with a single-site catalyst, in which the α-olefin has 3-8 carbon atoms, an ethylene-vinyl alcohol copolymer (B) having an ethylene content of 20-60 mol % and a degree of hydrolysis of 95% or above and 0.0001 to 2% of a hydrotalcite wherein the resin satisfies the equation: $1/99 \leq \{\text{weight of (A)}\}/\{\text{weight of (B)}\} \leq 40/60$ with reasonable expectation of obtaining a resin composition with improved intralayer separation strength based on the teachings of Nakatsukasa et al. in view of Negi et al.

11. Claims 35, 40,44, 45 and 46 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,258,464 B1 in view of Canich.

a. In US 6,258,464 B1, Negi et al. claim a multilayered structure which comprises at least three layers comprising a first layer made of a resin composition comprising a polyolefin (A), a saponified product (B) of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 80%, and ester or vinyl ester of an olefin-unsaturated dicarboxylic anhydride-unsaturated carboxylic telpolymer (C) wherein the following formulas are satisfied $1/99 \leq$ weight of (B)/weight of (A) $\leq 40/60$ and $0.1/99.9 \leq X \leq 20/80$ wherein X = weight of (C)/total weight of (A) and (B). The second layer is made of a saponified product of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 90%. The second layer meets the present limitations for the layer of an ethylene-vinyl alcohol copolymer. The third layer is made of a polymer obtained by grafting an unsaturated carboxylic acid or anhydride thereof to

an olefin polymer, where the third layer is positioned between the first and second layers (claim 1). The first layer further comprises a hydrotalcite in an amount of from 0.0001 to 2 % (claim 2), a metal salt of an aliphatic carboxylic acid in an amount of 0.0001 to 2% (claim 3) and at least one metal ion in an amount of from 5 to 5000 ppm (claim 4). Negi et al. do not claim how the polyolefin is obtained however it is well known in the polymerization art to use metallocenes to polymerize polyolefins. In US Patent No. 5,026,798, Canich teaches a catalytic process using a Group IV B transition metal component and an alumoxane component to polymerize α-olefins to produce high crystallinity and high molecular weight poly–α–olefins (abstract). Canich points out that traditional Ziegler-Natta catalysts systems are capable of producing polyolefins having a high molecular weight but a broad molecular weight distribution of the polyolefins. According to Canich, the "metallocene" catalyst system comprises a transition metal compound with two or more cyclopentadienyl ring ligands which catalyzes the production of olefin monomers to polyolefins (column 1, lines 23-50). The metallocene catalyst system of Canich produces crystalline poly–α–olefins of high weight average molecular weight and relatively narrow molecular weight distribution with high strength properties (column 1, lines 22-21 & column 2, lines 38-47). The Examiner notes that metallocene catalysts are also referred to as single-site catalysts.

b. It would have been obvious to use a metallocene catalyst to produce the polyolefin of the first layer based on the teachings of Canich. The resin composition of the first layer meets the present limitations for the resin composition wherein the resin composition comprises the polyolefin produced using a metallocene catalyst, a

saponified product of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 80%, and ester or vinyl ester of an olefin-unsaturated dicarboxylic anhydride-unsaturated carboxylic telpolymer. The first layer meets the present limitations for the layer comprising the resin composition. Further, it would have been obvious to make a multilayered structure comprising this resin composition as the first layer, a second layer comprising a saponified product of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 90% and a third layer made of a polymer obtained by grafting an unsaturated carboxylic acid or anhydride thereof to an olefin polymer, where the third layer is positioned between the first and second layers with reasonable expectation of obtaining a multilayered structure with high strength properties based on the teachings of Negi et al. and Canich.

12. Claim 48 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,258,464 B1 in view of Canich and Negi et al. (EP 682 072 A2).

a. As indicated in the previous obviousness-type double patenting rejection above, it would have been obvious to make a multilayered structure comprising at least three layers wherein the first layer comprises the polyolefin produced using a metallocene catalyst, a saponified product of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 80%, and ester or vinyl ester of an olefin-unsaturated

dicarboxylic anhydride-unsaturated carboxylic telpolymer and the second layer comprises a saponified product of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 90% based on the teachings of Negi et al. US '464 in view of Canich. Negi et al. do not claim the process by which the multilayered structure is formed. In EP 682 072 A2, Negi et al. clearly teach several methods for fabricating a similar multilayered structure including a co-extrusion laminating method (page 6, lines 32-57). Therefore it would have been obvious to one of ordinary skill in the art to make the multilayered structure of Negi et al. US '464 as modified by Canich by conventional methods such as co-extrusion with reasonable expectation of obtaining a multilayered structure with high strength properties based on the teachings of Negi et al. '464, Canich and Negi et al. EP '072.

13. Claims 46 and 48 are directed to an invention not patentably distinct from claim 1 of commonly assigned US 6,258,464. Specifically, Negi et al. claim a multilayered structure which comprises at least three layers comprising a first layer made of a resin composition comprising a polyolefin (A), a saponified product (B) of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 80%, and ester or vinyl ester of an olefin-unsaturated dicarboxylic anhydride-unsaturated carboxylic telpolymer (C) wherein the following formulas are satisfied $1/99 \leq$ weight of (B)/weight of (A) $\leq 40/60$ and $0.1/99.9 \leq X \leq 20/80$ wherein X = weight of (C)/total weight of (A) and (B). The second layer is made of a saponified product of an ethylene-vinyl ester

copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 90% (claim 1). Based on the teachings of Canich, it would have been obvious to use a metallocene catalyst to produce the polyolefin of the first layer. Further, it would have been obvious to one of ordinary skill in the art to make the multilayered structure of Negi et al. US '464 as modified by Canich by conventional methods such as co-extrusion with reasonable expectation of obtaining a multilayered structure with high strength properties based on the teachings of Negi et al. '464, Canich and Negi et al. EP '072.

14. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302). Commonly assigned US 6,258,464 B1, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee is required under 37 CFR 1.78(c) and 35 U.S.C. 132 to either show that the conflicting inventions were commonly owned at the time the invention in this application was made or to name the prior inventor of the conflicting subject matter. Failure to comply with this requirement will result in a holding of abandonment of the application.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon

the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications filed on or after November 29, 1999.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 35, 39-41, 44-46, 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Negi et al. in view of Canich.

a. In EP 682 072 A2, Negi et al. teach a resin composition comprising a polyolefin (A), a saponified product (B) of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 80%, and ester or vinyl ester an olefin-unsaturated dicarboxylic anhydride-unsaturated carboxylic copolymer (C) wherein the following formulas are satisfied $1/99 \leq$ weight of (B)/weight of (A) $\leq 40/60$ and $0.1/99.9 \leq X \leq 20/80$ wherein X = weight of (C)/total weight of (A) and (B) (abstract & claim 1). The polyolefins (A) used in the resin composition include homopolymers or copolymers of olefins and monomers copolymerizable with the olefins such as polyethylene resins. Polyethylene resins such as low density polyethylene, medium density polyethylene, high density polyethylene and linear low density polyethylene are preferred (page 3, lines 20-29). The polyethylene resins should have a melt index of from 0.01 to 100 g/10

min (0.001 to 10 g/min). The ethylene content of the EVOH (B) should be in the range of from 10 to 70 mole % and a degree of saponification of vinyl ester should preferably be not less than 90%. The EVOH preferably has a melt index of from 0.5 to 200 g/10 min (0.05 to 20 g/min) (page 3, lines 30-33 & lines 42-44). The EVOH (B) meets the preset limitations for the ethylene-vinyl alcohol copolymer. The ratio by weight between copolymer (C) and the total of EVOH (B) and polyolefin (A) is in the range of 0.1/99 to 20/80 (page 4, lines 42-45). The ester or vinyl ester an olefin-unsaturated dicarboxylic anhydride-unsaturated carboxylic copolymer (C) meets the present limitations for the carboxylic acid-modified polyolefin. The resin composition may further comprise a hydrotalcite compound (D) in an amount of from 0.0001 to 2% to improve the intralayer separation strength (page 5, lines 8-12). The resin composition may further comprise a metal salt of a higher aliphatic carboxylic acid such as lauric acid, stearic acid and myristic acid in an amount of from 0.0001 to 2% (page 5, lines 21-24). The metal salt of a high aliphatic carboxylic acid meets the present limitations for the same. The resin composition may comprise an alkali metal compound such as sodium phosphate in an amount of form 5 to 5000 ppm (page 5, lines 13-39). The sodium phosphate meets the present limitations for a phosphorus compound and an alkali metal salt. (The Applicant has indicated on page 17, lines 16-19 the phosphorus compound can be added to the composition.) The manner of blending (A), EVOH (B) and (C) is not critical and the thermoplastic resin can be dry blended and may be used as it is according to Negi et al. It is preferred that (C) is preliminary melt mixed with part of (A) and/or EVOH (B) and the melt is then blended with the balance of (A) and/or EVOH (B) to avoid the

development of cracks in the molded articles (page 4, lines 46-55). Negi et al. is silent to the type of catalyst used to prepare the polyethylene (A).

b. It is the Examiner's position that it is well known in the polymerization art to use metallocenes to polymerize polyolefins. In US Patent No. 5,026,798, Canich teaches a catalytic process using a Group IV B transition metal component and an alumoxane component to polymerize α-olefins to produce high crystallinity and high molecular weight poly–α–olefins (abstract). Canich points out that traditional Ziegler-Natta catalysts systems are capable of producing polyolefins having a high molecular weight but a broad molecular weight distribution of the polyolefins. According to Canich, the "metallocene" catalyst system comprises a transition metal compound with two or more cyclopentadienyl ring ligands which catalyzes the production of olefin monomers to polyolefins (column 1, lines 23-50). The metallocene catalyst system of Canich produces crystalline poly–α–olefins of high weight average molecular weight and relatively narrow molecular weight distribution with high strength properties (column 1, lines 22-21 & column 2, lines 38-47).

c. Therefore it is the Examiner's position that it would have been *prima facie* obvious to one of ordinary skill in the art to make a resin composition comprising a polyolefin produced using a metallocene catalyst, EVOH, an olefin-unsaturated dicarboxylic anhydride-unsaturated carboxylic ester or vinyl ester copolymer, hydrotalcite metal salt of a higher aliphatic carboxylic such as lauric acid, stearic acid and myristic acid in an amount of from 0.0001 to 2% and an alkali metal compound such as sodium phosphate with reasonable expectation of obtaining a polyolefin with

high molecular weight and a narrow molecular weight distribution which provides a polyolefin with high strength properties based on the teachings of Negi et al. and Canich.

d. With respect to the multilayered structure, Negi et al. clearly teach the production of a multilayered structure comprising at least two layers including a layer made of the resin composition and a layer made of a saponified product of an ethylene-vinyl ester copolymer (EVOH (B)) having an ethylene content of 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 90 % (page 3, lines 16-19). This multilayered structure has good gas barrier properties and good appearance (page 5, line 57 – page 6, line 3). The methods for fabricating the multilayered structure include a co-extrusion laminating method used through co-extrusion which are subjected to orientation to obtain containers (page 6, lines 25-57). Therefore it would have been obvious to one of ordinary skill in the art to make a multilayered structure comprising at least two layers including a layer made of the resin composition comprising polyolefin (A), a saponified product (B) of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 80%, and ester or vinyl ester an olefin-unsaturated dicarboxylic anhydride-unsaturated carboxylic copolymer (C), and a layer made of a saponified product of an ethylene-vinyl ester copolymer (EVOH (B)) having an ethylene content of 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 90 % wherein the polyolefin is produced using a metallocene catalyst based on the teachings of Negi et al.

in view of Canich with reasonable expectation of obtaining a multilayered structure with good gas barrier properties and high strength.

17. Claims 35, 39-41, 44-46, 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Negi et al. in view of Canich.

a. In US 6,258,464 B1, Negi et al. claim a multilayered structure which comprises at least three layers comprising a first layer made of a resin composition comprising a polyolefin (A), a saponified product (B) of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 80%, and ester or vinyl ester of an olefin-unsaturated dicarboxylic anhydride-unsaturated carboxylic telpolymer (C) wherein the following formulas are satisfied $1/99 \leq$ weight of (B)/weight of (A) $\leq 40/60$ and $0.1/99.9 \leq X \leq 20/80$ wherein X = weight of (C)/total weight of (A) and (B). The second layer is made of a saponified product of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 90%. The second layer meets the present limitations for the layer of an ethylene-vinyl alcohol copolymer. The third layer is made of a polymer obtained by grafting an unsaturated carboxylic acid or anhydride thereof to an olefin polymer, where the third layer is positioned between the first and second layers (claim 1). The polyolefins (A) used in the resin composition include homopolymers or copolymers of olefins and monomers copolymerizable with the olefins such as polyethylene resins. Polyethylene resins such as low density polyethylene, medium density polyethylene, high density polyethylene and linear low density

polyethylene are preferred. The polyethylene resins should have a melt index of from 0.01 to 10 g/10 min (column 3, lines 19-35). The ethylene content of the EVOH (B) should be in the range of from 10 to 70 mole % and a degree of saponification of vinyl ester should preferably be not less than 90%. The EVOH preferably has a melt index of from 0.5 to 200 g/10 min (0.05 to 20 g/min) (column 3, lines 37-62). The EVOH (B) meets the preset limitations for the ethylene-vinyl alcohol copolymer. The ratio by weight between copolymer (C) and the total of EVOH (B) and polyolefin (A) is in the range of 0.1/99 to 20/80 (column 5, lines 32-39). The ester or vinyl ester an olefin-unsaturated dicarboxylic anhydride-unsaturated carboxylic copolymer (C) meets the present limitations for the carboxylic acid-modified polyolefin. The resin composition may further comprise a hydrotalcite compound (D) in an amount of from 0.0001 to 2% to improve the intralayer separation strength (column 6, lines 7-14). The resin composition may further comprise a metal salt of a higher aliphatic carboxylic acid such as lauric acid, stearic acid and myristic acid in an amount of from 0.0001 to 2% (column 6, lines 30-43). The metal salt of a high aliphatic carboxylic acid meets the present limitations for the same. The resin composition may comprise an alkali metal compound such as sodium phosphate in an amount of form 5 to 5000 ppm (column 6, lines 44-62). The sodium phosphate meets the present limitations for a phosphorus compound and an alkali metal salt. (The Applicant has indicated on page 17, lines 16-19 the phosphorus compound can be added to the composition.) The methods of fabricating the multilayerd structure include an a co-extrusion laminating method (column 8, lines 17-44).

b. Negi et al. do not teach how the polyolefin is obtained however it is well known in the polymerization art to use metallocenes to polymerize polyolefins as taught by Canich. In US Patent No. 5,026,798, Canich teaches a catalytic process using a Group IV B transition metal component and an alumoxane component to polymerize α-olefins to produce high crystallinity and high molecular weight poly–α–olefins (abstract). Canich points out that traditional Ziegler-Natta catalysts systems are capable of producing polyolefins having a high molecular weight but a broad molecular weight distribution of the polyolefins. According to Canich, the "metallocene" catalyst system comprises a transition metal compound with two or more cyclopentadienyl ring ligands which catalyzes the production of olefin monomers to polyolefins (column 1, lines 23-50). The metallocene catalyst system of Canich produces crystalline poly–α–olefins of high weight average molecular weight and relatively narrow molecular weight distribution with high strength properties (column 1, lines 22-21 & column 2, lines 38-47). The Examiner notes that metallocene catalysts are also referred to as single-site catalysts.

c. Therefore it would have been obvious to use a metallocene catalyst to produce the polyolefin of the first layer based on the teachings of Canich. This first layer meets the present limitations for the layer comprising the resin composition wherein the first layer comprises the polyolefin produced using a metallocene catalyst, a saponified product of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 80%, and ester or vinyl ester of an olefin-unsaturated dicarboxylic anhydride-

unsaturated carboxylic telpolymer. Further, it would have been obvious to make a multilayered structure by co-extrusion wherein the first layer of the structure comprises this resin composition as the first layer, a second layer comprises a saponified product of an ethylene-vinyl ester copolymer having an ethylene content of form 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 90% and a third layer made of a polymer obtained by grafting an unsaturated carboxylic acid or anhydride thereof to an olefin polymer, where the third layer is positioned between the first and second layers with reasonable expectation of obtaining a multilayered structure with high strength properties based on the teachings of Negi et al. US '464, Canich. and Negi et al. EP '072.

Allowable Subject Matter

18. Claims 37, 42 and 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter: With respect to claim 37, Nakatsukasa et al. do not claim the ethylene content of the ethylene-α-olefin copolymer. With respect to present claim 42, Negi et al. (EP 682 072) clearly teach that the manner of blending the thermoplastic resins is not critical (page 4, line 46 – page 5, line 3). The blend can be pelletized however there is no teaching or suggestion in Negi et al. (EP 682 072 A2) of size of the pellets. With respect to current claim 47, Negi et al. clearly teach the production of a multilayered structure

comprising at least two layers including a layer made of the resin composition and a layer made of a saponified product of an ethylene-vinyl ester copolymer (EVOH (B)) having an ethylene content of 10 to 70 mole % and a saponification degree of the vinyl ester component of not less than 90 %, however there is no teaching or suggestion in Negi et al. of a further layer wherein the layer comprises an ethylene-α-copolymer produced by using a single-site catalyst and has a density of 0.90 to 0.94 g/cm^3.

20. Claims 21-34 are allowed.

21. The following is an examiner's statement of reasons for allowance:

a. The ethylene-vinyl alcohol copolymer of independent claim 21 contains a boron compound in an mount of 20 to 2000 ppm in terms of boron. In US Patent No. 5,741,872, Ikeda et al. teach a resin composition comprising EVOH and a thermoplastic polymer having at least one functional group selected from the group consisting of boronic acid group, borinic acid group and boron-containing groups convertible into boronic acid group or borinic acid group in the presence of water (abstract). Representative examples of the base polymers used for the thermoplastic resin are polymers which are essentially incompatible with EVOH (column 5, lines 1-42). There is no teaching or suggestion of EVOH containing a boron compound as required in the instant application. In EP 682 072 A2, there is no teaching or suggestion of the ethylene-vinyl copolymer containing a boron compound in an amount of 20 to 2000 ppm as required in the present application. With respect to US 6,388,007 B1, Nakatsukasa et al. do not claim an ethylene-vinyl copolymer containing a boron compound in an amount of 20 to 2000 ppm.

b. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. In US Patent No. 6,294,609 B1, Bertin et al. teach a composition based on an ethylene vinyl alcohol copolymer (abstract). This patent has a filing date of January 19, 2000.

b. In US 6,258,464 B1, Negi et al. teach a resin composition and multilayered structure comprising the same. US 6,258,464 B1 is in the same patent family as EP 682 072 A2.

c. In US 5,492,953, Itamura et al. teach a resin composition.

d. In US 5,322,877, Moriyama et al. teach a ternary resin composition and production thereof.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Gilliam whose telephone number is 703-305-1330. The examiner can normally be reached on Monday through Friday, 8:00 AM - 6:00 PM.

a. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on 703-308-2303. The fax phone

numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

b. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Barbara Gilliam

Barbara Gilliam
Examiner
Art Unit 1752

bg
April 21, 2003